

**What is claimed is:**

1. An electrodeless lighting apparatus using microwave comprising:  
means for constantly maintaining voltage and current applied to a  
5 magnetron of the electrodeless lighting apparatus by compensating a rate of  
variability of inputted AC voltage when oscillation current applied to a filament of  
the magnetron is varied due to a change of the inputted AC voltage.
2. An electrodeless lighting apparatus using microwave comprising:  
10 a power controlling unit for detecting a rate of variability of inputted AC  
power, and generating fixed AC voltage and current by compensating the detected  
rate of variability of the voltage,  
wherein a magnetron of the electrodeless lighting apparatus generates  
microwave based on the fixed AC voltage and current.  
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3. The apparatus of claim 2, wherein the fixed AC voltage is  
converted into high DC voltage by a high voltage transformer, and the converted  
high DC voltage is applied to the magnetron.
- 20 4. An electrodeless lighting apparatus using microwave comprising:  
a power controlling unit for detecting a rate of variability of voltage of  
inputted AC power, and generating fixed AC voltage and fixed oscillation current  
by compensating the rate of variability of the voltage;  
a high voltage transformer for converting the fixed AC voltage into high DC  
25 voltage, and outputting the converted high DC voltage; and

a magnetron for generating microwave based on the fixed oscillation current and the high DC voltage.

5        5.        The apparatus of claim 4, wherein the power controlling unit comprises:

a rectification/smoothing unit for converting commercial AC power into DC power;

10        a control unit for detecting a rate of variability of voltage of the commercial AC power, and generating a voltage compensating signal for compensating the rate of variability of the voltage;

an inverting unit for converting voltage of the converted DC power into fixed AC voltage by varying a frequency of the DC power converted by the rectification/smoothing unit based on the voltage compensating signal of the control unit,

15        a first transformer for converting the fixed AC power outputted from the inverting unit into predetermined fixed voltage and current, and applying the predetermined fixed voltage and current to a filament of the magnetron; and

a second transformer for converting the fixed AC voltage outputted from the inverting unit into predetermined fixed voltage,

20        wherein, the high voltage transformer converts predetermined fixed voltage outputted from the second transformer into high DC voltage, and outputting the converted high DC voltage to the magnetron.

25        6.        A method for controlling power of an electrodeless lighting apparatus using microwave comprising constantly maintaining voltage and current

applied to a magnetron of the electrodeless lighting apparatus by compensating a rate of variability of inputted AC voltage when oscillation current applied to a filament of the magnetron is changed due to a change of the inputted AC voltage.

5           7.       A method for controlling power of an electrodeless lighting apparatus using microwave comprising:

          detecting a rate of variability of inputted AC voltage; and

          generating fixed AC voltage and current by compensating the detected rate of variability of the voltage,

10           wherein the electrodeless lighting apparatus generates microwave based on the fixed AC voltage and fixed current.

          8.       The method of claim 7, wherein the fixed AC voltage is converted into high DC voltage by a high voltage transformer of the electrodeless lighting apparatus, and the converted high DC voltage is applied to the magnetron.

          9.       A method for controlling power of an electrodeless lighting apparatus using microwave comprising:

          detecting a rate of variability of inputted AC voltage, and generating fixed AC voltage and fixed oscillation current by compensating the rate of variability of the voltage; and

          converting the fixed AC voltage into high DC voltage, and outputting the converted high DC voltage,

          wherein a magnetron of the electrodeless lighting apparatus generates microwave based on the fixed oscillation current and the high DC voltage.

10. The method of claim 9, wherein said generating the fixed AC voltage and the fixed oscillation current comprises:

converting inputted commercial AC power into DC power;

5 detecting a rate of variability of voltage of the commercial AC power, and generating a voltage compensating signal for compensating the rate of variability of the voltage;

converting the converted DC power into fixed AC power by varying a frequency of the converted DC power based on the voltage compensating signal;

10 and

converting the converted fixed AC power into predetermined fixed voltage and current, and applying the predetermined fixed voltage and current as converted to a filament of the magnetron.